## Amendments to the Specification:

Please replace paragraph [0007] with the following amended paragraph:

**[0007]** The invention provides apparatus for generating an electronic signal in response to ~~selected wavelengths of~~ light. A first sensor is provided for converting ~~the selected wavelengths of~~ light to a first electronic signal. A second sensor is provided for converting ~~additional wavelengths of~~ light to a second electronic signal. A circuit is also provided, for manipulating the first and second electronic signals to generate an output signal responsive to the ~~selected wavelengths of~~ light.

Please replace paragraph [0008] with the following amended paragraph:

**[0008]** According to another aspect of the invention, a first photodiode converts ~~the selected wavelengths of~~ light to a first electronic signal. A second photodiode converts ~~additional wavelengths of~~ light to a second electronic signal. A circuit manipulates the first and second electronic signals to generate an output signal responsive to the ~~selected wavelengths of~~ light.

Please replace paragraph [0009] with the following amended paragraph:

**[0009]** According to one aspect of the invention the first and second sensors have ~~a~~ different spectral sensitivity ~~differential~~ provided by using photodiodes with dissimilar optical thicknesses.

Please replace paragraph [0010] with the following amended paragraph:

**[0010]** According to the methods of the invention, an electronic signal corresponding to ~~selected wavelengths of~~ light is generated. The method includes the step of converting ~~first and second wave length segments of~~ light into first and second electronic signals. ~~The selected wavelengths are included in the converted wavelength segments~~. In another step, the first and second electronic signals are manipulated to generate an output signal corresponding to the ~~selected wavelengths of~~ light.

Please replace paragraph [0011] with the following amended paragraph:

**[0011]** Numerous advantages are provided by the invention, including but not limited to ~~improved~~ reduced response and sensitivity to ~~selected wavelengths of~~ near infra-red light. The invention also provides a corresponding elimination of sensitivity and responsiveness to deselected wavelengths of light. Advantages of reductions in cost and complexity are realized by the invention in providing an improved integrated wave-light responsive photoconductive apparatus not requiring additional or external components such as filters. These and many other advantages related to the

improvements of the invention will become apparent to persons skilled in the relevant arts through careful reading of the disclosure and claims presented herein.

Please replace paragraph [0015] with the following amended paragraph:

**[0015]** Figure 3 is a schematic diagram showing a preferred invention embodiment of a wavelength-~~selective~~ responsive electronic signal generating apparatus ~~of the invention~~;

Please replace paragraph [0024] with the following amended paragraph:

**[0024]** Figure 2 is a process flow diagram showing the steps and the method of the invention. Preliminarily, it is assumed that the invention is exposed to light 100. The light contains a continuum of wavelengths here represented by $\lambda_x - \lambda_y$. In step 102 and concurrent step 104, a non-identical photoconductivity response is obtained to ~~non-identical~~ light spectrum ~~segments~~ within the continuum $\lambda_x - \lambda_y$, here represented by $\lambda_A$, shown in step box 102 and $\lambda_B$, shown in step box 104. The photoconductivity responses generated in steps 102 and 104 result in first and second electronic signals, shown respectively by steps 106 and 108. In step 110, the first and second electronic signals are manipulated, preferably by a circuit further described below. The principle of the manipulation step 110 is to use the differential between responses to $\lambda_A$ and $\lambda_B$ to produce a calibrated electronic signal. Thus, one electronic signal, for example, the first electronic signal, may be used to calibrate another electronic signal, in this example, the second electronic signal. Accordingly, in step 112, an

output signal is generated which corresponds to ~~selected wavelengths~~ a pseudo-spectrum of light~~, for example, $\lambda_B$~~. This general description of the methods of the invention will become increasingly clear in light of the further description which follows.

Please replace paragraph [0026] with the following amended paragraph:

**[0026]** The term "optical thickness" is used in the art with reference to the transfer of radiant energy. As used herein, the term "optical thickness" means the thickness of a light-absorbing material lying in a vertical column from a surface. Figure 3A is a graphical representation showing the preferred doping profile for photodiode A 12. The N-type buried layer 300 at a depth of about 7.0 micrometers creates a built-in electric field which defines the optical thickness of photodiode A12. Figure 3B is a graphical representation of the preferred doping profile for photodiode B. The N-type buried layer 302 at the depth of about 3.5 micrometers creates a built-in electric field which defines the optical thickness of photodiode B 14. The optical thickness of photodiode A 12 is preferably approximately 7.0 microns and the optical thickness of photodiode B 14 is approximately 3.5 microns. These optical thicknesses are preferred because of their respective inherent responses to light. With silicon, an optical depth of about 3.5 microns (photodiode B) provides a peak response at the peak response of the human eye, about 555 nm.

The choice of about 7.0 microns of optical thickness for photodiode A is made because it provides approximately twice as much current due to the near-infrared light as the 3.5 micron photodiode (B). ~~This optical thickness differential, and corresponding response differential, is~~

~~advantageous as further discussed below~~. This optical thickness differential (optical thickness ratio), and corresponding near infra-red (IR) response differential (currents ratio), is advantageous because it allows one to cancel near-IR pseudo-response if one multiplies the thin photo-diode current (B 14) by the thickness differential (thickness differential = thick photodiode thickness divided by thin photo-diode thickness) and further subtract the thick photodiode current. Of course, other optical thickness differentials may be used within the principles of the invention, provided additional components of the invention are adjusted accordingly.

Please replace paragraph [0032] with the following amended paragraph:

**[0032]** Figure 6 depicts the photodiode A and photodiode B currents of Figures 4 and 5 on an inverted scale (negative up). One aspect of silicon used by the invention is demonstrated by Figure 6. Regardless of the thickness, silicon photodiodes cut off at about 1.0 micrometer~~s~~ of wavelength. Figure 6 also illustrates how the optical thickness differential between photodiode A and photodiode B may be used to provide the desired photo response. The slope of the electronic signal conversion to a wavelength of about 1.0 micrometer~~s~~ is, due to the properties of silicon, approximately proportional to the optical thickness (see curves 601 and 603). Subtracting the difference in currents between photodiode A and photodiode B from the signal of photodiode B, the much reduced response represented by curve 600 is obtained. Curve 601 represents the current from the 3.5 microns thick photodiode B and curve 603 represents the current from the 7.0 microns thick photodiode A. As can be seen from curve 600, the manipulation of the separate photodiode signals,

in this case $I_{OUT} = n*(I_B - (I_A - I_B)$ results in signal 600 centered at approximately 555 nanometers wavelength <u>and cancellation of the near infra-red response above 800 nanometers</u>.

<u>[0033]</u> As shown in Figure 7, the signal 600 discussed with reference to Figure 6 is superimposed upon the theoretical response for a typical human eye to visible light, signal 700. It should be appreciated by those skilled in the arts that the invention may also be practiced for intervals of light centered on other ~~selected~~ wavelengths. It should also be understood that the optical thickness differential may be varied without departure from the concept of the invention. For example, if photodiode A were three times the optical thickness of photodiode B, thus $I_{OUT} = n* (I_B - ½ (I_A - I_B))$.